

## REMARKS

Reconsideration of the application is respectfully requested.

Claims 1, 3, 5-10, 14-22, and 24-38 are pending. Independent Claims 1, 6, 8, 10, 14, 21, 27, 28, 29, 30, 34, 35, and 36 were previously amended. Claims 2, 4, 11, 12, 13, and 23 were previously cancelled. No new claims have been added.

### Rejections Under 35 USC § 103

The Action has maintained the rejection of Claims 1, 3, 5-10, 14-15, 18-22, and 24-38 under 35 U.S.C. §103(a) as being unpatentable over U.S. Patent No. 6,420,501 to Uwai ("Uwai"). Applicants presently claimed invention recites the limitation that the catalyst composition has an activity determined as g/Polyethylene polymer/gCatalyst – hr) which is at least about 38.9% greater than a comparative activity determined under essentially identical conditions of an essentially identical comparable supported catalyst composition system in which the metallocene catalyst compound and the activator were not first heated from 75°C to 125°C for about 30 minutes to about 3 hours according to step (a), and then combined with a carrier heated to 30-75°C in which the metallocene catalyst compound and the activator were at a temperature of from 75°C to 125°C and the carrier was at a temperature of 30-75°C when the two were combined according to step (b).

Uwai discloses an activity of comparable examples which is 750 gPE/gCat-Hr which is out of Applicants recited range of an activity which is at least about 38.9% greater than a comparative activity determined under essentially identical conditions of an essentially identical comparable supported catalyst composition system in which the metallocene catalyst compound and the activator were not first heated from 75°C to 125°C for about 30 minutes to about 3 hours according to step (a), and then combined with a carrier heated to 30-75°C in which the metallocene catalyst compound and the activator were at a temperature of from 75°C to 125°C and the carrier was at a temperature of 30-75°C when the two were combined according to step (b).

Further, as the Action recognizes, Uwai discloses a process wherein the metallocene and the activator are mixed at a temperature range from -50°C to 100°C, preferably 0 to 50°C, with 20-30°C being more preferred (See Col. 13, lines 1-10). Uwai then discloses that

the support is combined with the metallocene-activator product wherein the support is 85-150°C (See Col. 13, lines 17-19.) The net result of Uwai is a catalyst which is at least 39% less active than Applicants' presently claimed invention. The Action suggests however, that Applicants' recited temperature "would have been the result of routine experimentation by one of ordinary skill in the art in an effort to optimize the catalyst activity while reducing reactor fouling by taking into consideration the polymerization parameters (i.e., time, temperature, reactor type, pressure, etc.)" However, the Action fails to provide any indication wherein Uwai, or for that matter any prior art, suggests or discloses that the reaction temperature of the metallocene with the activator AND the temperature of the support upon combination of the catalyst-activator with the support is a "results effective variable" subject to such "routine experimentation." Indeed, Applicants' discovered the unexpected and surprising result that the catalyst activity is improved by at least 39% through controlling the support temperature. The unexpected nature of this discovery is the hallmark of a true invention. Applicants did not obtain this vast improvement over the prior art by simply controlling a known variable which reacts in a known way to produce a known result. Instead, Applicants discovered a way to greatly improve the activity of a catalyst compound by controlling a variable within a narrow window having an upper limit 25% lower than the lowest value disclosed in the art. It is a long held precept of U.S. Patent Law that "Claims to a process involving a combination of reactants and reaction conditions within the broad teaching of the prior art are patentable where the combination produces an unexpected result rather than the optimum of that taught by the prior art (*Ex parte Hoff et al.* (POBA 1959) (127 USPQ 281) See also *In re Sebek* (CCPA1972) 465 F.2d 904), 175 USPQ 93) Applicant's demonstration of unexpected results cannot be ignored merely because the claimed process is within the broad teachings of the prior art. In *re Costello* (CCPA 1973) 480 F.2d 894, 178 USPQ 290. Same, comparative data in examples in the specification showing an unobvious result (even though the examples did not state that a condition critical to the invention existed when the examples were performed). Accordingly, the presently claimed invention is not rendered obvious by the generic teaching of Uwai, which fails to disclose or suggest all of Applicants' recited limitations.

The Action further contends that at equal mixtures and assuming equal heat capacities, the resultant temperature of Applicants' presently claimed invention would be 100°C. While this may be true, these facts have little to no relevance to the presently claimed invention, wherein the densities, relative amounts, and heat capacities of the various

components vary widely. Furthermore, the Action fails to consider the exothermic reactions that occur when the two components are combined. Accordingly, Applicants respectfully submit that the final temperature of an arbitrary set of circumstances is not pertinent to the patentability of the instant claims.

The Action further suggests that Examples 15 and 16 of the instant specification show that some organometal compounds do not fall under the presently claimed invention. While this may be true, the fact remains that Applicants disclose Examples wherein this unexpected benefit is achieved, and thus comport with 35 U.S.C. §112. Furthermore, Applicants note that Examples 15 and 16 presented other issues which may have affected the activity of the catalyst, and as such, simply do not fall within the bounds of the presently claimed invention.

The Action also suggests that examples 9-16 teach mixing then heating and not the claimed pre-heating. Applicants respectfully disagree and direct the Action's attention to the Examples of the application as filed, wherein Applicants explicitly disclose a mixing time and a mixing temperature for the metallocene and the activator, and the mixing temperature of the support, which is in concert with numbered paragraph [0061] wherein Applicants explicitly state that the carrier is heated prior to combining with the heated catalyst/activator product.

In conclusion, Uwai fails to disclose or suggest combining the heated catalyst/activator mixture with a support according to Applicants' presently claimed invention. As such, Uwai fails to disclose or suggest all of Applicants' recited limitations; thus, a *prima facie* case of obviousness has not been established. Withdrawal of the rejection is respectfully requested.

Claims 16 and 17 have been rejected under 35 USC § 103(a) as being unpatentable over Uwai, and further in view of U.S. Patent No. 5,367,037 to Lee et al. ("Lee").

As discussed previously, Lee fails to disclose or suggest Applicants' recited step (a) followed by step (b). Lee thus fails to cure the defects in Uwai. As such, Uwai in view of Lee fails to disclose or suggest all of Applicants' recited limitations; thus, a *prima facie* case of obviousness has not been established.

Accordingly, Applicants do not recite a mere variation of temperature on a known process step in which the temperature is known to be critical, but in fact, recite an entirely separate combination of steps which the cited prior art each fail to disclose or suggest.

As such, none of the cited prior art provides any disclosure or suggestion which even remotely recognizes or suggests Applicants' discovery that the deliberate heating of the catalyst and the activator prior to contacting with the support is a critical variable which achieves a recognized result. Accordingly, Applicants' presently claimed invention cannot be considered an optimization of a result effective variable since no such variable existed prior to Applicants' invention. Furthermore, in the inventive Examples described in the Affidavits submitted, Applicants have shown vast improvement that are unexpected in view of the cited prior art.

Applicants respectfully request that all rejections be withdrawn and solicit a prompt notice of allowability. In the alternative, Applicants invite the Office to telephone the undersigned attorney if there are any other issues outstanding which have not been presented to the Office's satisfaction.

Respectfully submitted,

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Date

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